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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,350	09/23/2003	Yuji Shinkai	117259	3395
25944	7590	06/06/2007		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER TUGBANG, ANTHONY D	
			ART UNIT 3729	PAPER NUMBER
			MAIL DATE 06/06/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/667,350

Applicant(s)

SHINKAI, YUJI

Examiner

A. Dexter Tugbang

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-36 and 39-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-36 and 39-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/20/06.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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Disposition of Claims

- 4) ☒ Claim(s) 25-36 and 39-44 is/are pending in the application.
- 4a) Of the above claim(s) 27,33,34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25,26,28-32,35,36 and 39-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
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- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
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Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/20/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 14, 2007 has been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

3. Claims 27, 33 and 34 continue to stand as being withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on February 6, 2006.

Claim Rejections - 35 USC § 103

4. Claims 25, 26, 28 through 32, 35, 36, 39 through 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hiwada 6,270,193, Kishi 6,095,641 and Eifuku et al 6,000,127.

Hiwada discloses a method of manufacturing an ink jet head comprising: an ink passage unit (e.g. 20) and a printed circuit board (e.g. 72); forming an actuator unit (e.g. 21) including a

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piezoelectric element (e.g. 21c) disposed on the ink passage unit (e.g. 20), a surface electrode (e.g. 21e) disposed on the piezoelectric element and having a main electrode portion (e.g. 21e) opposed to a pressure chamber (e.g. 21d) and a connection portion opposed to a wall portion, and a land (e.g. 68, 69) disposed on the piezoelectric element, the land being electrically connected to a terminal (e.g. 62, 63); disposing a metallic bond (e.g. 64) and a thermosetting conductive adhesive (e.g. 65) between the terminal and the land; pressing the land and the terminal so that they are brought near each other, for discharging at least part of the thermosetting conductive adhesive from a gap between the land and the terminal (Fig. 11B), bringing the terminal and the metallic bond into contact with the land (Fig. 11C); pressing and heating the metallic bond and the thermosetting conductive adhesive so that the metallic bond is disposed in a region over the land and the terminal and that the thermosetting conductive adhesive forms a protrusion that formed in the connection portion between the main electrode portion and the land (Fig. 10 and 11D).

Regarding Claim(s) 42 and 44, Hiwada shows in Figures 11A through 11D, a thermosetting adhesive (e.g. 65) disposed only in a region (e.g. entire ink jet passage unit 21) opposed to a wall portion of the pressure chamber.

Regarding Claim(s) 41 and 43, the sequence of Hiwada's Figure 11A-11C shows that the disposing step occurs before the pressing and heating steps.

Hiwada does not teach that: 1) the thermosetting conductive adhesive is an epoxy thermosetting resin; and 2) the land is disposed on the piezoelectric element in a region opposed to the wall portion of the pressure chamber, as required in each of Claims 25 and 31.

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Kishi shows that lands (e.g. 28) must be formed on the piezoelectric element (e.g. 22A) in a region opposed to a wall portion (e.g. any wall portion of 22) to electrically connect the lands (e.g. 28) to the surface electrodes (e.g. 23 in Figs. 2 and 3). This arrangement allows the ink jet head to operate and eject ink through the pressure chambers.

It would have obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hiwada by forming each land on the piezoelectric element in a region opposed to a wall portion of the pressure chambers, as taught by Kishi, to allow current to operate the piezoelectric element and eject ink through the pressure chambers.

Eifuku teaches a bonding process (as noted in paragraph 7 above) that includes an epoxy thermosetting resin for the benefit of improving overall working efficiency (see col. 1, lines 17-25 and lines 59-64).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hiwada by utilizing the bonding process including a thermosetting resin, as taught by Eifuku, to advantageously improve the overall working efficiency.

Further regarding Claims 30, 36 and 40, Hiwada does not teach that the matrix forms at least three rows and three columns of the pressure chamber in a plane of the ink passage unit.

Kishi shows that in making an ink jet print head, stacking the pressure chambers (as shown in Fig. 1) can occur to product a matrix of pressure chambers of at least three rows and at least three columns in a plane of an ink passage unit. This process of Kishi provides an increased manufacturing efficiency (col. 3, lines 7-11) and also allows more ink to eject with a higher resolution.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hiwada, by stacking the pressure chambers to produce a matrix of pressure chambers of at least three rows and at least three columns in a plane of an ink passage unit, as taught by Kishi, to provide the advantages of increased manufacturing efficiency and allow more ink to eject with a higher resolution.

Regarding Claim(s) 39, the parameter of an Anisotropic Conductive Adhesive (ACP) is considered to be effective variable to achieve a desired result through routine experimentation. *In re Aller*, 220, F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Therefore, the limitations drawn to the use of ACP for the thermosetting resin would have been an obvious improvement to one of ordinary skill in the art over Hiwada and Eifuku through routine experimentation.

Response to Arguments

5. The applicant(s) arguments filed on February 15, 2007 have been fully considered and are now met in light of the teaching of Kishi with respect to the feature of the land being disposed on the piezoelectric element in a region opposed to a wall portion of the pressure chamber.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570. The examiner can normally be reached on Monday - Friday 7:30 am - 4:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/A. Dexter Tugbang/
Primary Examiner
Art Unit 3729**

May 23, 2007